OceanTRx4
Antenna Control Unit (ACU)
Replacement Procedure

Document: TEC-OTRx-ACU-001 Rev :-

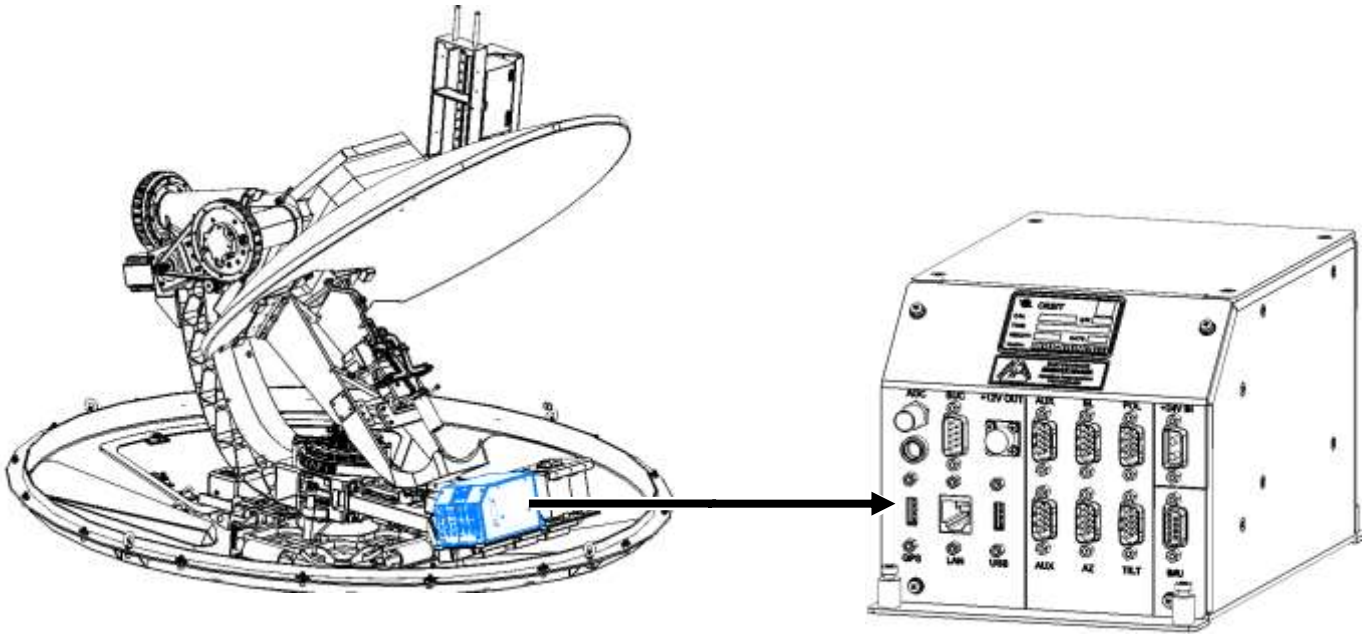


Figure 1-1 ACU Location on the Pedestal

General warnings and instructions!

WARNING!

Only qualified and authorized personnel are allowed to carry out system service/maintenance procedures.

Before starting the procedure:

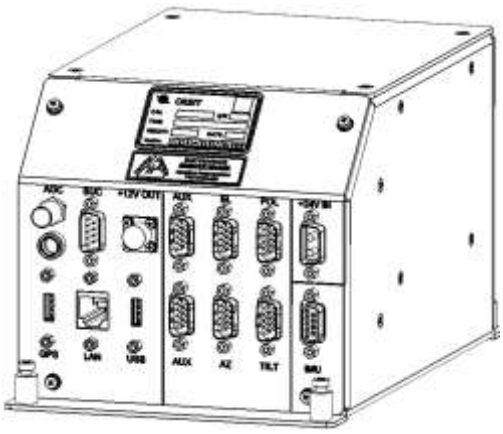
- Open the radome hatch. Inside the RADOME, Switch off the ADE Power Box at the Antenna pedestal base.
- Manually rotate the pedestal axes to gain convenient access to the serviced unit.

General instructions relevant to this procedure

Note the following:

- Make sure you have latest software package (GSupdate.zip) on your computer/CCU.
- High technician password needed

Box content: (P/N: OTRx-ACU-001-SP)

Quantity	Description	
1	ANTENNA CONTROL UNIT (ACU)	

Required tools

Tool/Part Name	Figure
Philips screwdriver	
Flat screwdriver	
Side cutter	
Open/ring wrench 11,19mm and ¾”	

1. Remove the ACU

This procedure consists of two phases:

- If the ACU can communicate – backup the configuration files of the faulty ACU (before replacing it).
- Physically removing the faulty ACU from the pedestal.

1.1. Backup ACU Configuration and IMU Calibration Files

This procedure is only relevant if communication is available to the ACU. If the ACU is unable to communicate, skip this procedure and replace the ACU.

To backup the ACU Configuration and Calibration Files

1. Below deck, from the **CCU** (either directly or from external computer), launch the **MtsDock** application.
2. Open a session to the ACU:
   - From the **ACU** menu, select **Connect**. The Connect to ACU dialog appears.

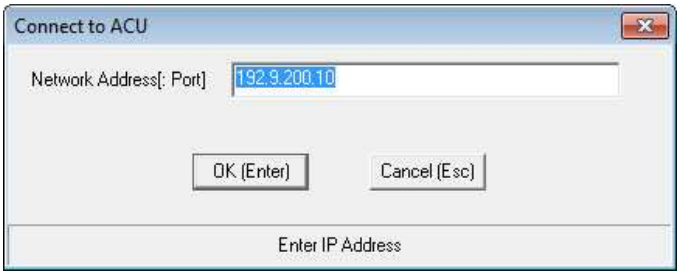


Figure1.1. Connect to ACU

   - Enter (or verify), the IP Address of the ACU to be backed-up. Click **OK.** When connection is established between the CCU and the ACU, a message box appears confirming the connection.
3. Save the ACU configuration:
   - From the **ACU** menu, select **Get Configuration.**
   - Author and **save** the configuration file on the CCU or USB flash drive.
4. Save the IMU Calibration:
   - From the **ACU** menu, select **Calibration** and choose **Get IMU Calibration**.
   - Author and Save the **IMU** calibration file on the CCU or USB flash drive.

1.2. Remove the ACU from the Pedestal

Step 1.

Disconnect all cables from ACU:

- OUTER cables first – working inwards.
- Use Small flat screwdriver for the D-type connectors.
- Cut tie-wraps where necessary.

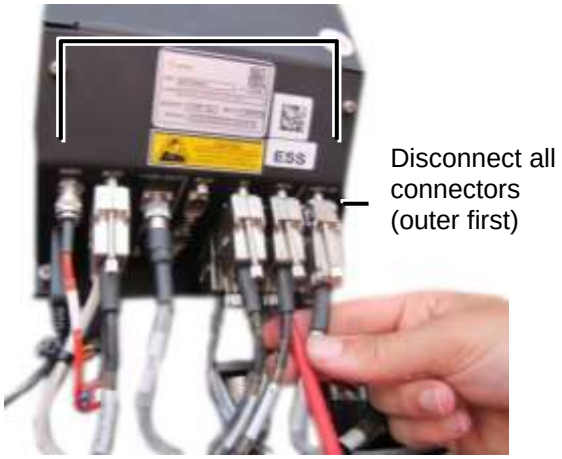


Figure 1-1. Remove ALL Connectors

Step 2.

Release x4 captive screws:

- Release x4 captive screws securing the ACU to the pedestal.
- Use long-handled medium Philips screw driver to reach screws between ACU and the power supply.

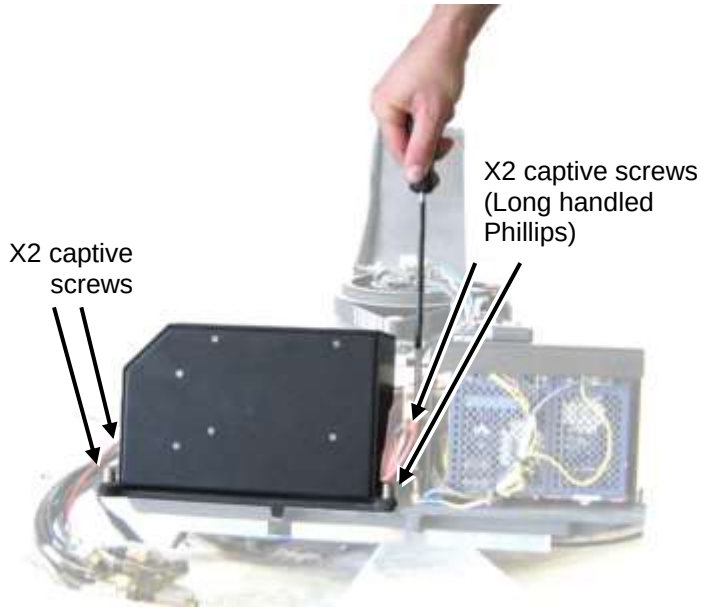


Figure 1-2. Loosen 4x Bolts

Step 3.

Set aside the ACU.

ACU Removal procedure is complete.

Figure 1-3

2. Install the ACU

This procedure consists of the following phases:

- Physically installing the ACU on the pedestal.
- System power-up.
- Software configuration procedures for system setup.

2.1. Mount the New ACU

Step 1.

Mount the ACU:

- Position the new ACU on the pedestal.
- Tighten the x4 captive screws.
- Use long-handled medium Philips screw driver to reach the 2x screws between ACU and the power supply.

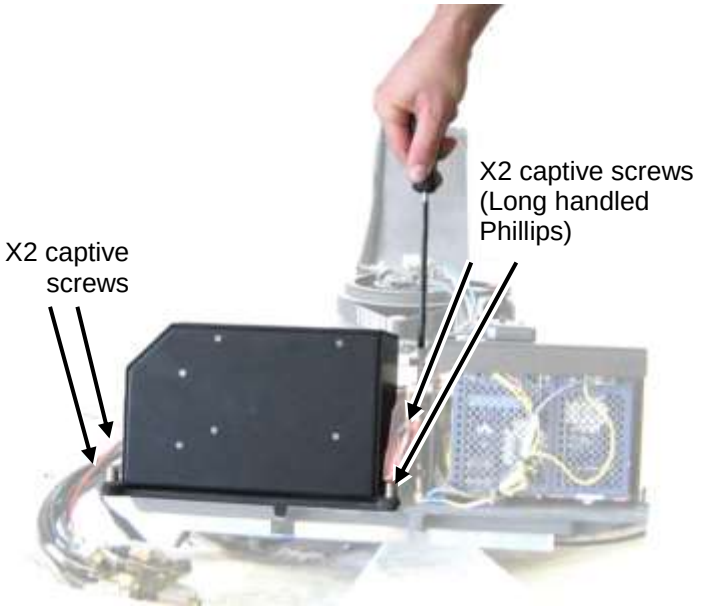


Figure 2-1. Tighten 4x Bolts

Step 3. Connect all cables to the ACU front panel:

- Read CABLE LABELS - verify each cable is corrected connected to the corresponding port.
- INNER connectors first, working towards OUTER connectors.
- (AUX connector is not in use).
- Tighten the D-type connectors using your hand. Finish off lightly with the screwdriver.
- Be sure to connect the **GPS USB cable** to the **GPS** USB port.
- Secure USB cable with tie-wraps.

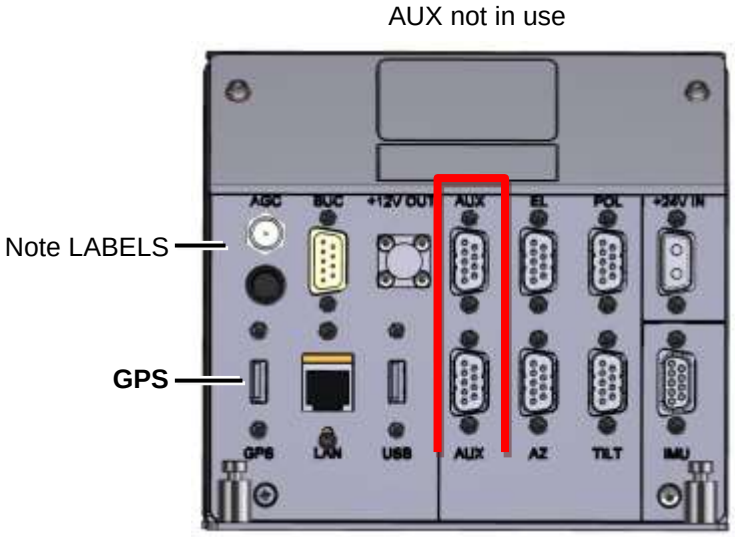


Figure 2-2. Connect Cables

2.2. Power-up the System

Power on the ADE (antenna unit) according the OTRx 4 Installation and Operation manual.

2.3. Identify and (If Necessary) Modify the ACU IP Address

If default IP addressing scheme (ACU 192.9.200.10 | CCU192.9.200.22) is used skip to stage 3 Setup the ACU.

To identify the ACU IP address using MtsDock Application:

1. Below deck, on the **CCU,** run the MtsDock application.
2. Find the ACU IP Address:
   - In the MtsDock window, **ACU** menu, select **Edit Network Parameters.**
   - Choose **Detect ACU**. The **Detected ACU** dialog box appears.
   - Note the IP Address, Subnet Mask and Default Gateway.

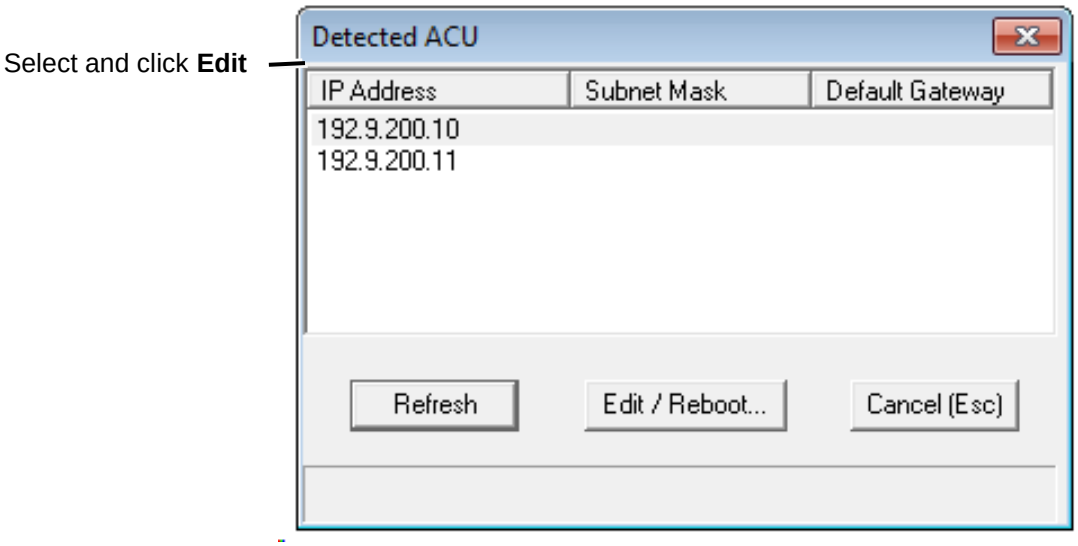


Figure 2-3 Detected ACU Dialog Box

3. If necessary, modify the ACU IP Address:
   - Select the IP Address and click **Edit.** The following dialog appears.

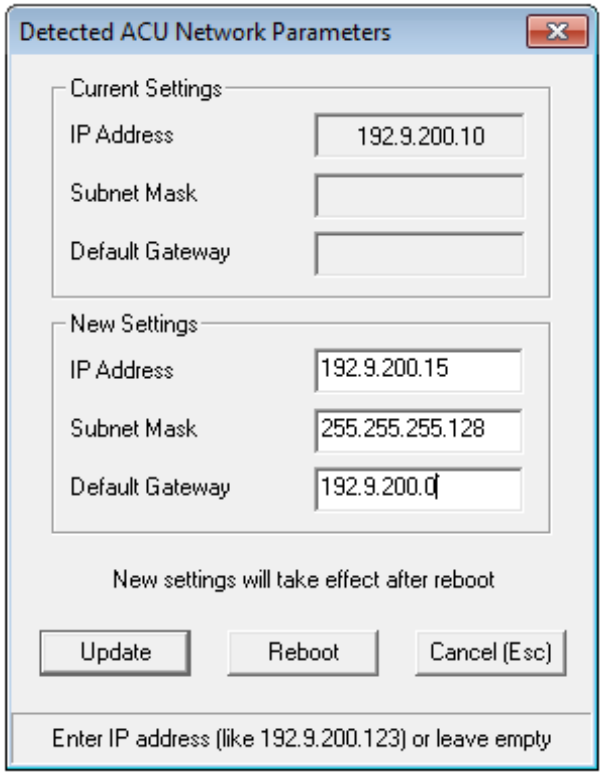


Figure 2-4 Modify IP Address

   - Change the IP address/subnet mask of the ACU to match (same subnet) IP Address of existing equipment: CCU, modem and CFE laptop) IP scheme.
   - Click **Update** and then **Reboot**.

- Verify the Mtslink fields are populated (**WRN/ERR messages may appear**).

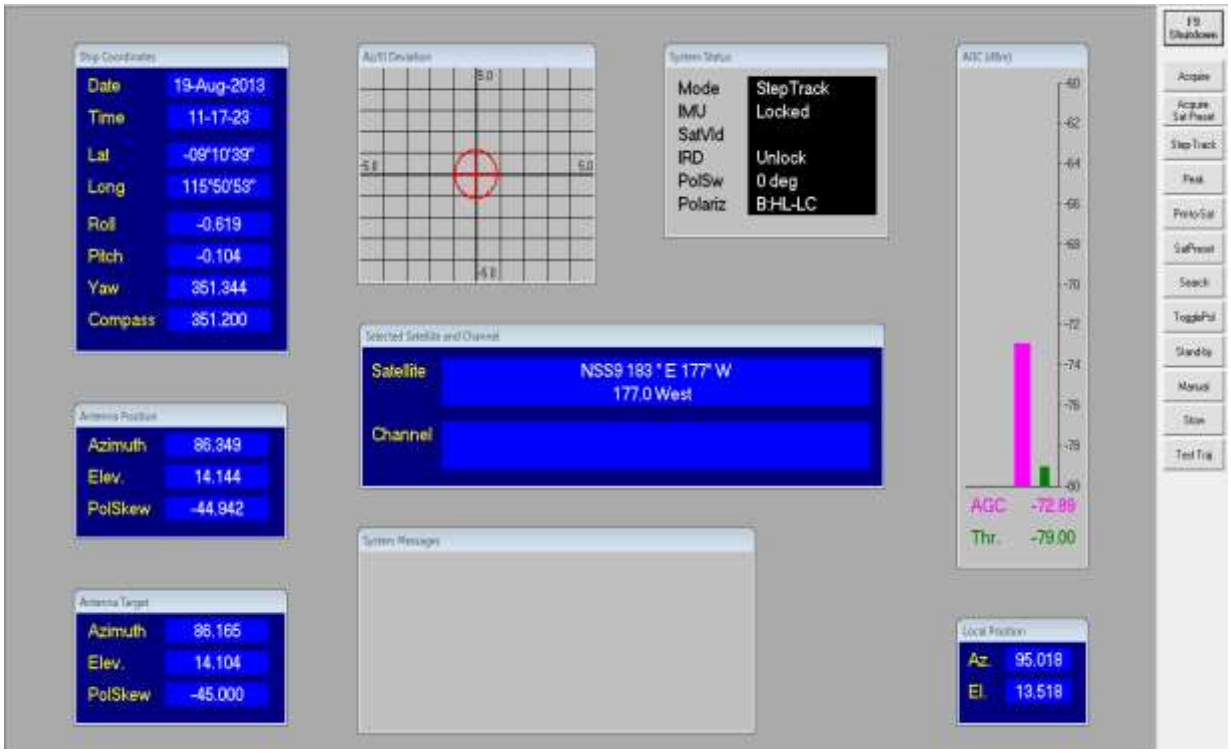


Figure 5 Mtslink

- From the **Config** menu, choose **external hardware IP.** Enter the CCU IP address**.**
- Save configuration

3. Setup the ACU

This procedure consists of updating three stages:

- General Software Update Module (GSU) files – acquired from Orbit
- ACU Configuration files – if available.
- IMU calibration files – from ORBIT if not available during preliminary phase

3.1. Updating the system software using GSU

1. Copy the GSU file on to a USB flash drive:
   - Obtain the latest General Software Update Module (**GSU)** file from Orbit.
   - Copy the zipped and the executable files to a USB flash drive.
   - Connect the flash drive to the USB port on the **CCU** front panel.
2. On the CCU (directly or via a connected computer), run the **MtsDock** application.

3. From the **ThisHost** menu, choose **General Software Update...**. The **Select ZIP Archive with Software Updates** dialog box appears.

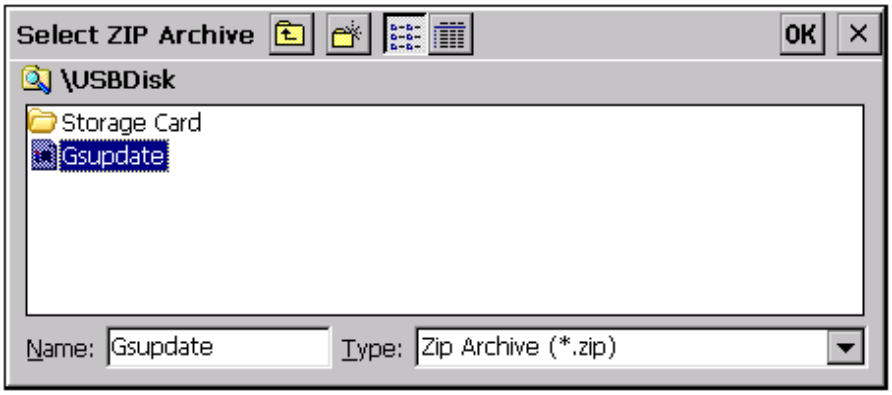


Figure 3-1 Select ZIP Archive with Software Updates Dialog Box

4. Browse for the **GSU** file from the **USB Flash** drive and click **Open.** You will be prompted to enter the ACU IP Address (Section 2.3).

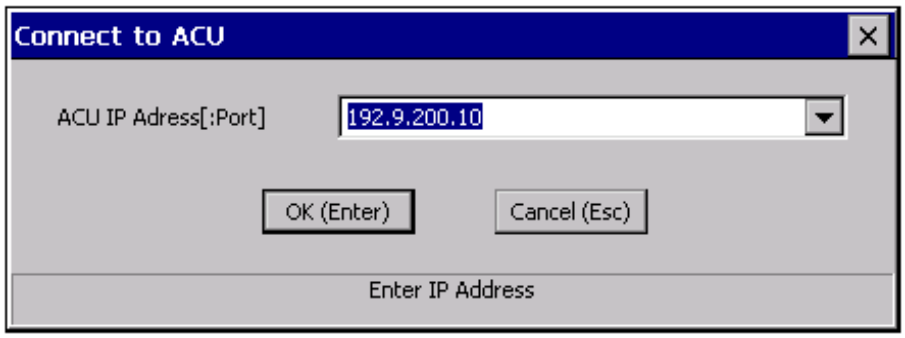


Figure 3-2: Connect ACU, CCU Message Box

5. Click **OK (Enter)**.
6. At the end of the process, respond to the reboot prompt by clicking **OK**.

3.2. Verify Actual Software Version of the Systems Units

To verify the software version on the system units

1. The following is assumed at this phase:
   - System is powered-on.
   - Communication is established with the ACU.
2. To verify versions:
   - In the **MtsLink** main window, select the **Version** menu.

     Verify that the new version was successfully installed and matches the software version used by the CCU.

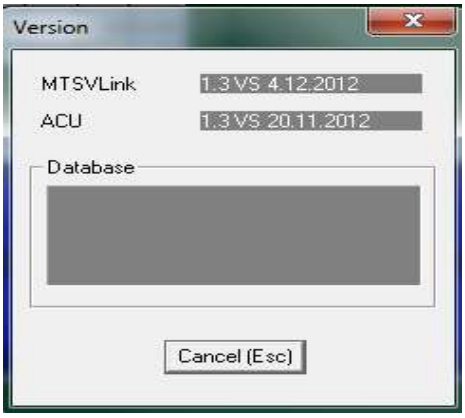


Figure 3-3: ACU and CCU program Version

   - From the **Config-View** menu, choose **Hardware ID.**

     Verify that the new version is reflected in this display as well.

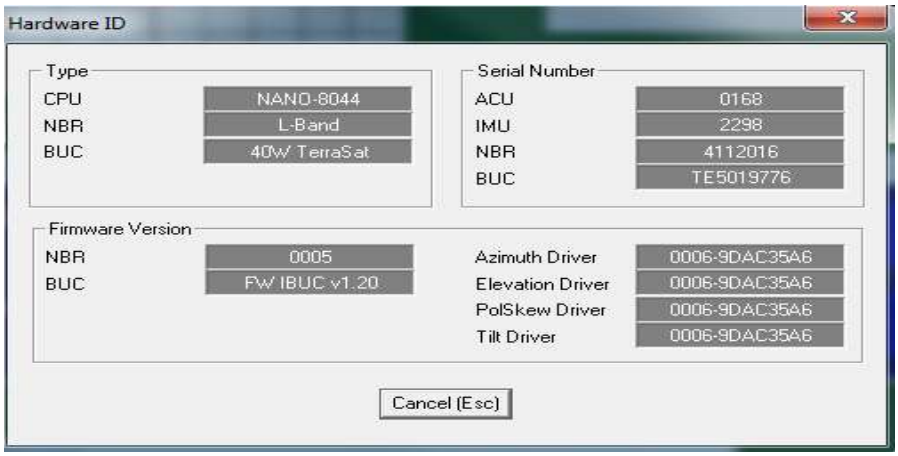


Figure 3-4: Element Versions

Contact Orbit support for software version compliance table

3.3. Uploading the ACU Configuration File

To upload the ACU Configuration file

1. The following is assumed at this phase:
   - System is powered-on.
   - You are connected to the CCU.
   - The **MtsDock** and the **MtsLink** applications are launched.
2. From the **ACU** menu, select **Connect**. The Connect to ACU dialog box appears.

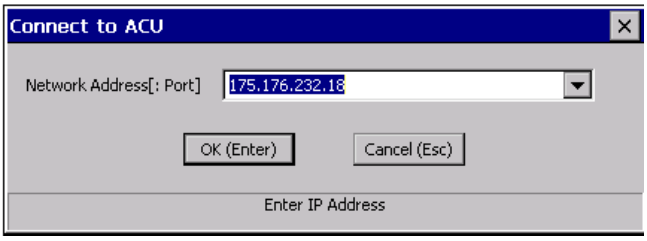


Figure 3-5: Connect ACU

3. Establish connection:
   - Verify that the correct ACU IP address appears in the **Network Address** field and click **OK (Enter)**.
   - When connection is established between the CCU and the ACU, a message box appears confirming the connection.
4. From the **ACU** menu, select **Put Configuration** and Load the configuration file downloaded via the preliminary procedure.

If the configuration file is not available, follow the steps below; otherwise skip to step 12.

5. Enter the High Technician password (obtain from Orbit support).
6. Configure the IMU type:
   - From the **Maintenance** screen, select **Config** and choose **View**.
   - Configure the shown → IMU configuration set: sensors =**original**, processing=**modified**.

Figure 3-6: IMU configuration

7. From the **Maintenance** screen →Commands system ID →select system type from the list.

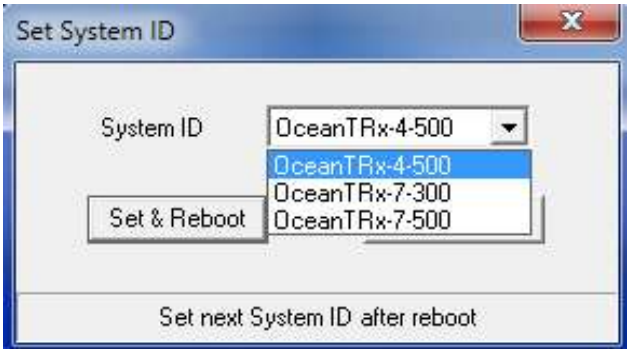


Figure 3-7: System ID selection

8. Determinate and configure compass offset. (Refer to Installation and operation manual)
9. Set system type band, polarization and constellation (if applicable).
10. Set BUC model maintenance screen →TX chain →select BUC model from the list
11. Determinate and configure blockage zones
12. Perform noise floor correction
13. Save configuration
14. IF system not equipped with automatic beam switching or other external remote control select satellite and channel
15. Save configuration

3.4. Uploading the IMU Calibration File

If the calibration file is not available (preliminary procedure) contact Orbit support to obtain IMU calibration file based on serial number

To upload the IMU Calibration file

1. The following is assumed at this phase:
   - System is powered-on.
   - The MtsDock application is launched.
   - Communication is established with the ACU.
2. From the **ACU** menu, select **Connect**. The Connect to ACU dialog box appears.

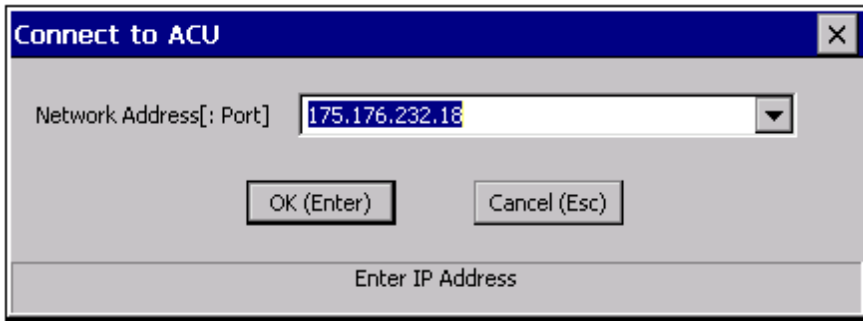


Figure 3-8: Connect ACU

3. Establish connection:
   - Verify that the correct ACU IP address appears in the **Network Address** field and click **OK (Enter)**.
   - When connection is established between the CCU and the ACU, a message box appears confirming the connection.
4. From the **ACU** menu, select **Put IMU Calibration** and browse for the file downloaded via the preliminary procedure. What if it wasn't available??
5. Switch off the system

4. Performing Verification Test

1. Verify the cable routing is correct and properly secured.
2. Power up the system and confirm system initializes properly.
3. To make sure the technical process completed successfully, in the **MtsLink** application:
   - Click on **Test Traj**
   - Make sure no error messages appear in the System Messages window.
   - Acquire satellite and verify you have proper AGC.
   - Verify the Modem Rx EbNo and TX power with NOC.

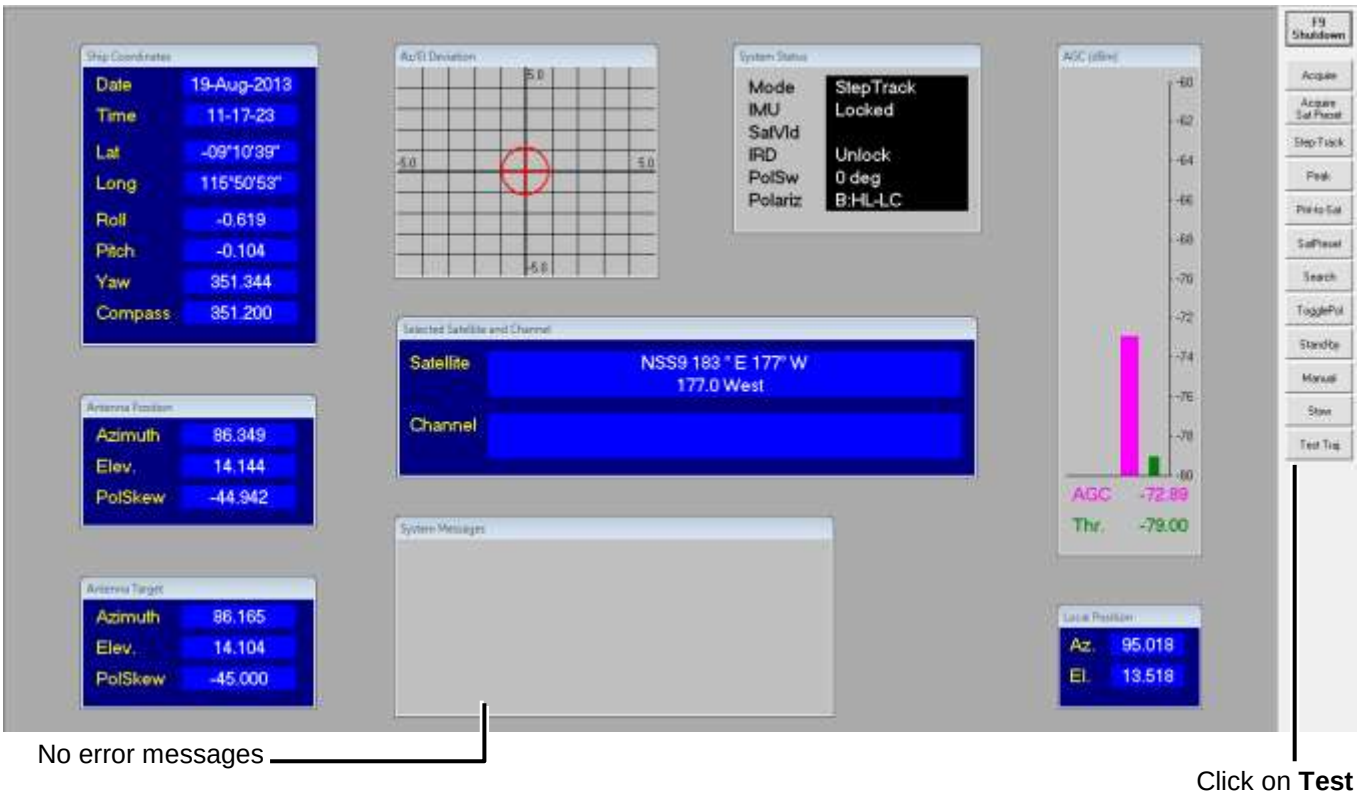


Figure 4-1: Verification Test